

# CURRENT LINE

DAR STATEWIDE PROJECT INFORMATION NEWSLETTER

VOLUME 2, NUMBER 1, January 1998

## MAHALO!

We would like to extend a BIG MAHALO to all you fishermen/women out there who have so kindly participated in our Fishing Survey. We really appreciate all your efforts in taking the time to fill out and return our survey forms. To those of you who were interviewed by our staff at the shoreline, MAHALO for all your KOKUA.

For your interest, we will be publishing the summary results of this survey in future issues of the 'Current Line'. We may be covering the results in sections over several issues since the summary will be too long to publish in just one issue.

Again, MAHALO for your continued interest in the 'Current Line'!

## LICENSES, RULES & REGULATIONS

### CORRECTION:

#### KONA CRAB SIZE LIMIT

It has been brought to our attention that the minimum size for home consumption of kona crab was misprinted in the last issue of 'Current Line'. There is **no minimum size for home consumption**. The minimum size of 4 inches long or wide is correct for the SALE of kona crab.

### REMINDERS:



**Mullet Season** (for 'ama'ama or striped mullet) is **closed** between December to February. Open Season will resume on March 1st and run till November 30th.

**Waikiki Diamond Head Fishery Management Area** is **OPEN** to fishing from January 1, 1998 to December 31, 1998.

The area will be closed to fishing from January 1, 1999 to December 31, 1999.

## NEARSHORE PROJECTS

### FISH RECRUITMENT AT KEAWAKAPU ARTIFICIAL REEF

The artificial reef program is just one of the projects funded through the Federal Sport Fish Restoration Program. Excise taxes are collected by the Federal Government from the sale of boating and fishing equipment and supplies. Together with State matching amounts, funds are used to improve and expand fishery projects in Hawaii to improve sport fisheries.

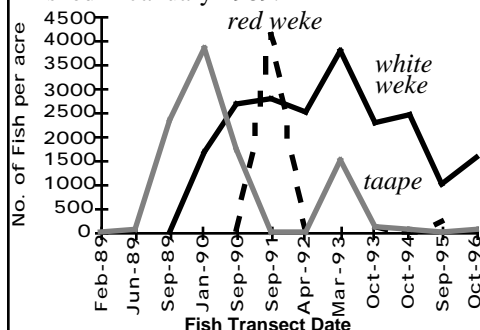
Artificial reefs are created and placed in strategic locations to increase fish populations. This is accomplished by placing materials such as derelict barges and other vessels, concrete pipes, concrete tire modules, and the current "Z" or "N" shaped concrete modules in previously barren sandy areas which help to attract fish. Over time, plants and animals become established on the reef. The reef provides habitat and a complex food chain begins to develop. As more organisms become established, the number and types of fishes have increased.

The Keawakapu Artificial Reef is located on a flat sandy bottom on the south side of Maui. It is one of 5 artificial reefs in the State. First established in 1962, one hundred-fifty car bodies were dropped to a depth of 80 to 85 feet creating the beginnings of the artificial reef. Fish recruited to the area but over time, the car bodies disintegrated and the remains were covered by sand.

In January 1989, the Keawakapu Artificial Reef was re-established with 922

concrete modules and 35 concrete "table" shelters dropped to a depth of 60 to 70 feet on the sandy bottom. In February 1990, another 1,170 concrete-tire modules were added to this area. This gave DAR an excellent opportunity to study fish recruitment at the artificial reef.

Fish transects have been used to count and monitor fish populations. The following chart shows some of the data taken from fish counts at Keawakapu Artificial Reef since it was re-established in January 1989.



Recruitment in the first year was dominated by juvenile fishes. By January 1990, the taape or blueline snapper (*Lutjanus kasmira*), was the most abundant species on the reef with counts reaching a high of 3,848 fish per acre. This accounted for 67% of the total fish population observed. However by September 1990, counts of taape dwindled down to 1,750 fish per acre while the numbers of other fish species were steadily increasing. The following year in September 1991, taape populations reached a low of 25 fish per acre while the red weke (*Mulloides vanicolensis*) replaced the taape as the most abundant fish with counts of 4,124 fish per acre. The white weke (*Mulloides flavolineatus*) became the second most abundant species that year with counts of 2,797 fish per acre. Since then, the white weke has taken over to become the most abundant fish at Keawakapu for the remaining counts.

During the last 8 surveys, white weke has averaged 2,402 fish per acre, followed by red weke with 762 fish per acre. Because of the extremely high counts of taape during the earlier years, this became the third most common species averaging 453 fish per acre. These three species combined make up between 85% and 95% of the total number of fishes found on the artificial reef.

As corals, invertebrates, and algae become established, the artificial reef will become similar to other coral reefs. The aggregation of fishes like white weke, red weke, and taape appear to make up the base population of fishes for the Keawakapu reef. The initial recruitment of taape appears to have been kept in check by the increase in fish numbers and other species.

More than 80 species of fish have been recorded at Keawakapu reef. These include other goat fishes, surgeon fishes, snappers such as uku and jacks such as kahala. In the past seven years, an average survey at Keawakapu has reported an abundance of 3,744 fish per acre representing about 32 species of fish.

### **EXPANDED ARTIFICIAL REEFS**

Maui's diving and fishing enthusiasts now have an additional place for ocean recreation activities as the *St. Anthony*, a 65-foot former longliner was scuttled at the Keawakapu Artificial Reef on Sunday, October 26, 1997. The local boating community and the U.S. Coast Guard banded together to sink the vessel in water depths between 65-70 feet.

In addition, three barge loads totaling 1,388 specially designed "Z" habitats built from donated surplus concrete were added to the Maunalua Bay Artificial Reef (Oahu) between November 10-15, 1997.

## **FRESHWATER FISHING**

### **NUUANU RESERVOIR ALIEN SPECIES FISHING CONTEST**

An Alien Species Fishing Contest was held in conjunction with the August-October 1997 catfish season at Nuuanu Reservoir. Cash prizes were awarded to those anglers who caught the most tilapia and convict cichlids at the reservoir. The objective of the Fishing Contest was to remove as many of these alien fish as possible. Tilapia compete with the channel catfish in the reservoir for food. Convict cichlids prey on catfish eggs and fry.

1,026 anglers participated in the contest. A total of 13,184 tilapia and convict cichlids were removed from the reservoir. Winning groups were determined by dividing the number of tilapia and convict cichlids caught by the number of anglers in each group fishing for them. Winning groups, ranging in size from one to ten individuals, caught between 101 and 700 fish in a four hour period. The following anglers were presented with cash awards:

**FIRST PRIZE: \$100.00** - Camille Yamamoto (9/13/97)

**SECOND PRIZE: \$50.00** - Eugene Kam & Natsuo Shigezawa (8/30/97)

**BEST OF WEEKEND PRIZE: \$25.00**  
**to each winning team**

#### **Winning Anglers:**

**8/16/97** - Judge Higa & Dennis Yamamoto

**8/23/97** - Dennis Lee & Karen Lee

**9/7/97** - James Acopan, James Acopan Jr., Jared Acopan, Norma Acopan, Harry Imai, Arnold Wong, & Paul Wong

**9/20/97** - Dante Arios, Faylen Hirayama, Harley Hirayama, Kyle Hirayama, Robert Hirayama, James Iba, Jeraldine Iba, Randy Iwasaki, & Rick Matsukawa

**9/27/97** - Bert Oshiro, Daniel Oshiro, Kay Oshiro, & Alan Tam

**10/4/97** - Lom Laoinh, Vanhphenh Laoinh, Malicahn Linthavong, Viengkeo Linthavong, Joan Pounpanya, Noudy Pounpanya, Vanh Sibangoune, Khoun Xayapheth, Khamla Xayasa, & Sinphone Xayasa

#### **Fishing Contest Winning Numbers**

<i>Date</i>	<i># of Anglers</i>	<i># of Fish Caught</i>	<i>Ave. # of Fish Caught</i>
*9/13	1	103	<b>103</b>
**8/30	2	200	<b>100</b>
8/16	2	176	<b>88</b>
8/23	2	162	<b>81</b>
9/20	9	700	<b>77</b>
9/7	7	387	<b>55</b>
10/4	10	337	<b>33</b>
9/27	4	101	<b>25</b>

\*First Place Winner

\*\*Second Place Winner

**CONGRATULATIONS TO EVERYONE!**

#### **1997 TROUT OPENING**

As promised, here are the totals for the last trout opening:

	<i>1995</i>	<i>1996</i>	<i>1997</i>
	<i>Opening</i>	<i>Opening</i>	<i>Opening</i>
<b># of anglers</b>	5,080	2,911	2,761
<b># of fish</b>	*12,880	7,666	10,151

\*Data is only an estimate due to budget constraints

## **OFFSHORE PROJECTS**

### **TA'APE IN REVIEW**



The taape or blue line snapper (*Lutjanus kasmira*) is one of several small species of snappers introduced into Hawaiian waters from the South Pacific during the late 1950's and early 1960's. Taape and other species of snappers were introduced to offer additional game fish for Hawaii's fishermen.

Taape are now found throughout the Hawaiian archipelago from the Big Island to Midway. They inhabit coral reefs in both shallow lagoons and outer reef slopes. They are found in depths down to 145 fathoms. Average size for this fish is about 10 inches total length. Large specimens will reach a total length of almost 16 inches.

Scientists have seen the taape as an opportunistic fish feeding on mostly fish, crabs, and shrimps. Previous studies done by University of Hawaii researchers found that fish was the dominant food item found in the guts of almost 200 taape caught in nearshore waters. Most of this was too highly digested to determine what fish species were eaten, but they were able to identify a few 'ala'ihhi or squirrel fish, a sabertooth blenny, and a type of flat fish. Since these fish are of completely different types, this may indicate that the taape are not targeting any one particular species for food.

Fish counts conducted by DAR at the Keawakapu Artificial Reef on Maui shows that the initial recruitment of taape appears to have been kept in check by the increase in fish numbers and other species (refer to article "Fish Recruitment at Keawakapu Artificial Reef" on page 1 of this issue). This initial abundance/recruitment of taape at new reef sites and their decrease in numbers over time has also been observed at other artificial reefs on Oahu, off Waikiki and Waianae. However, it's not known why this happens, as more monitoring is needed to account for the continuing evolution of the artificial reef. As more information is learned about taape, we will relay it to you.

Recently, University of Hawaii scientists conducted 3 submarine dives with the submersible Pisces V off Haleiwa, Oahu. During these dives, which start from 1,000 feet and end up at 400 feet, they observed juvenile kalekale, ehu, adult

hapuupuu, and other deep sea fishes, but not a single taape. As more dives are being made in the future, we will continue to monitor them to see if the taape show up.

Fishermen believed that taape were displacing bottomfish from their grounds. Other fishermen have reported that over time, the taape will stop biting and the opakapaka will sometimes begin to bite. It is unknown exactly what relationship exists between these fish. Perhaps the taape create a feeding frenzy that naturally attract the opakapaka and this influx of opakapaka chases the remaining taape away. However, this is only a theory that needs to be looked at through further studies.

DAR is helping to fund a study with University of Hawaii researchers which we hope will give us more information on taape. In the near future, Dr. Jim Parrish and his research team may be asking some of you, as fishermen, for assistance with this project. If you are interested in helping with this project and would like to find out more or just want to talk story about it, you can contact Dr. Parrish at **956-8350**. You can also write to him at:

**Hawaii Cooperative Fisheries  
Research Unit  
2538 The Mall  
University of Hawaii  
Honolulu, Hawaii 96822**

If you prefer e-mail, the address is:

**jparrish@zoogate.zoo.hawaii.edu**

The overall health of Hawaiian fisheries will depend upon maintaining stable fish populations. The taape as one of the many species of fish can and will need to be kept in check by other fishes.

### **OPAKAPAKA TAGGING UPDATE**



The Division conducted tagging studies in an effort to better monitor and understand our valuable bottomfish resources. During 1989 to 1994, approximately 4,000 'opakapaka were tagged and released off Oahu and in Maui County. Although there have been no further tagging efforts due to the retirement of the senior project biologist, submittal of tags and information by cooperating fishermen and data collection on recoveries

have continued. The following chart will give you some of the information collected:

	7/1/95 to 6/30/96	7/1/96 to 6/30/97
<b>estimated growth rate</b>	2" /yr	2" /yr
<b>longest days of freedom</b>	1,638 days	2,176 days (almost 6 years!)
<b>farthest distance traveled</b>	235 nautical miles	80 nautical miles
<b>largest fish caught</b>	23" FL at 6.5 lbs	26" FL at about 9 lbs.
<b>growth of largest fish caught over time tagged</b>	5"	11"

*Current Tag Recoveries (fish recovered between 7/1/96 to 6/30/97):*

<u>Number Recovered</u>	<u>Tagging Site</u>	<u>Recovery Site</u>
2	Ewa	Ka'ena Pt., O'ahu
* 1	Ewa	Moloka'i
1	Makapuu, O'ahu	Kahuku, O'ahu
* 1	Moloka'i	Ka'ena Pt., O'ahu
1	Moloka'i	Penguin Bank
16	Moloka'i	Moloka'i

\* *Some notable movement of tagged 'opakapaka*

This behavior of channel crossing was previously unknown to both fishermen and scientists, and has implications for fishery management. The Division will pay \$10 for each tag returned with the following information:

1. WHO (name & address of fisherman)
2. WHEN (date)
3. WHERE (location of capture)
4. DEPTH (fathoms)
5. SIZE (tip of mouth to fork of tail in inches)

### **FOR REWARD!**

**Notify any DAR office:**

O'ahu	587-0094
Maui	243-5294
Kaua'i	274-3344
Hawai'i	974-6201
Moloka'i	567-6696

**YOU KEEP THE FISH!**

### **FAD PROJECT**



The deployment cruise scheduled for last October 1997 was canceled because of damages sustained to the R/V KILA on September 26. The University of Hawaii has chosen not to repair the ship and will sell the KILA. The program is in the process of chartering a commercial workboat to do the work. Dates for future deployments are still pending. Here is the most recent update of missing FADs:

*MISSING FADs (as of Nov. 1997):*

<u>FAD</u>	<u>Location</u>	<u>Island</u>
E	Lelewi	Hawai'i
G	Pepeekeo	Hawai'i
QQ	Makuu	Hawai'i
UU	Auau Pt.	Hawai'i
MC	Palaoa	Lana'i
LA	Lahaina	Maui
HO	Hoolawa Pt.	Maui
JJ	Kamohio	Kaho'olawe
EK	Hanalei	Kaua'i
Z	Kipukai	Kaua'i
O	Kalaupapa	Moloka'i
WK	Wailua	Kaua'i
DK	Anahola	Kaua'i

For current locations and/or more information, contact Warren Cortez at 848-2939. Also, if you know of any FADs that broke loose, see any light out or have any other comments, please give Warren a call.

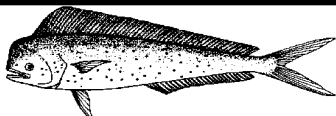
### **CORRECTIONS FOR 'OPAKAPAKA FISH FACTS**

The 'AGE' column from last month's chart on the growth rate and age of opakapaka has been updated as follows:

#### **Length, Weight and Age of Opakapaka**

<u>Fork Length (inches)</u>	<u>Weight (pounds)</u>	<u>Age (years)</u>
6		0.8
9.5	0.7	1.5
12.5	1.5	2.2
15	2.25	2.8
18.3	4	4.1
20	5	5
24	8.8	8
27	11.25	14
29	14	18

## FISH FACTS



*Coryphaena hippurus*  
(Dolphin Fish, Mahimahi)

### SIZES

**Length:** large specimens will reach a length of 6 feet or more

**Weight:** range is about 17 - 30 pounds, but can reach up to about 70 pounds or more

### BREEDING

**Sexual Maturity:** females begin to mature at a fork length of 13.8 inches; all fish are mature at a fork length of 21.7 inches.

**Spawning:** fish found around the main Hawaiian Islands spawn throughout the year.

### LIFESTYLE

**Distribution:** Found throughout the tropical and subtropical waters of the Atlantic, Indian, and Pacific Oceans. In the Eastern Atlantic, known from the Canary Islands to Angola.

**Habitat:** Inhabits surface waters of the open ocean, but known to approach coastal waters. Fish often follow ships and tend to aggregate under floating objects.

**Diet:** Feeds on flyingfish and other fish of similar size and squid in the upper water column.

**Life Span:** maximum known age 5 yrs.

**Swimming Speed:** cruising speed is about 1.3 mph

### RELATED SPECIES

The mahimahi is a member of the Dolphin Fish or Dorado Fish Family which consists of only two species of fish. The other species, also known as mahimahi or pampango dolphin fish, resembles the larger mahimahi but is smaller, reaching a maximum length of 30 inches. The larger mahimahi is important to the commercial and recreational fisheries, while the smaller mahimahi is caught occasionally by both fisheries. The smaller mahimahi has a broad, square-cut tongue, while the common mahimahi has a tongue which is narrower and rounder in front.

The following table will give you an idea of how fast these fish grow and how old they are. Please note that these are just ballpark figures and meant only to give you a general idea on the relationship of length, weight, and age.

<i>Length, Weight and Age of Mahimahi</i>		
Fork Length (inches)	Weight (pounds)	Age (years)
20	2.6	0.3
28	6.4	0.5
35	12.6	0.7
39	17	0.8
43	22	1
51	34	1.1
55	42	
59	50.5	
63	60	
67	71	
71	83	4

The Department of Land and Natural Resources receives financial support under the Federal Aid in Sport Fish Restoration and other federal programs. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and the laws of the State of Hawaii, the U.S. Department of the Interior and the State of Hawaii prohibit discrimination on the basis of race, color, religion, sex, national origin, age, and disability. If you believe that you have been discriminated against in any program, activity or facility, or if you desire more information, please write to the U.S. Fish & Wildlife Service, Office for Human Resources, 1849 M Street NW, Room 3058, Washington, D. C. 20240.